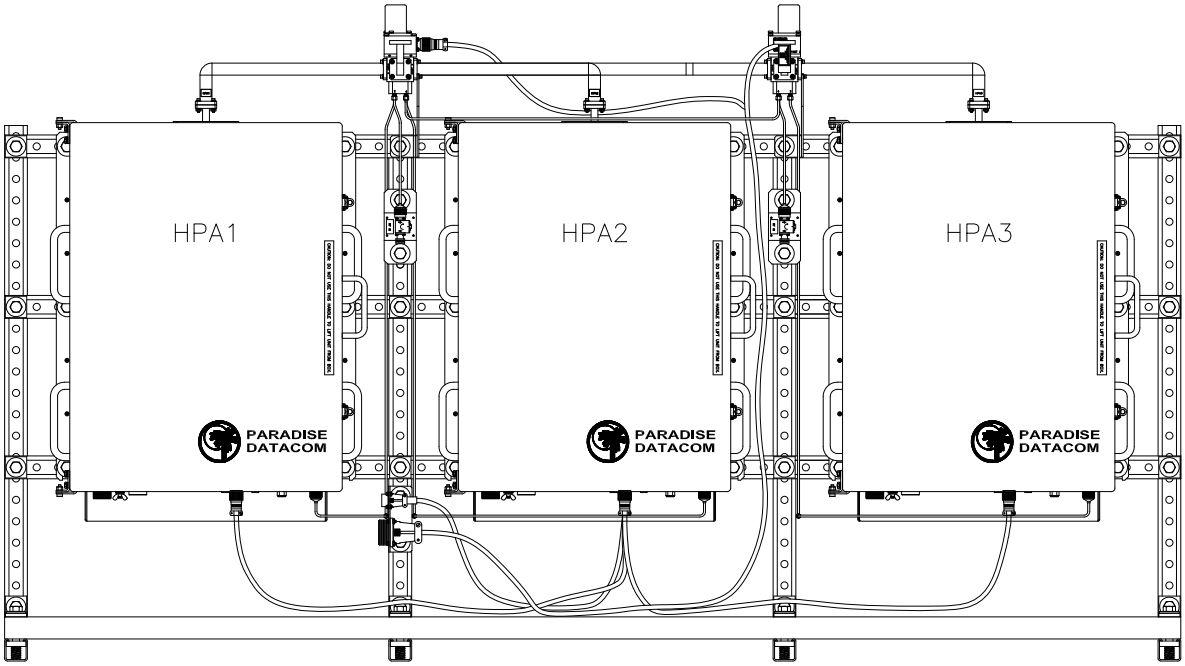
1:2 High Power Outdoor System Mounting Kit Installation Manual



Paradise Datacom LLC
328 Innovation Blvd.
State College, PA 16803 USA
Email: sales@paradisedata.com

Phone: (814) 238-3450
Fax: (814) 238-3829
Web: www.paradisedata.com

205075 REV B ECO 15239 03/05/2008

328 Innovation Blvd.
State College, PA 16803 USA
Telephone: 814-238-3450
Fax: 814-238-3829
E-mail: sales@paradisedata.com

© 2008 Paradise Datacom LLC
Printed in the USA

Introduction

This manual outlines the assembly and mounting procedure for a 1:2 High Power Outdoor SSPA System.

Before beginning the assembly of the uni-strut mounting kit, verify that the kit includes all of the items in Table 1-1. If any items are missing, please contact Paradise Datacom with the part number and quantity of the shortage.

Paradise Datacom LLC
328 Innovation Blvd.
State College, PA 16803

Phone: 814-238-3450
Fax: 814-238-3829
e-mail: sales@paradisedata.com

The following instructions describe the assembly of the uni-strut mounting kit, and the installation of the High Power Outdoor SSPAs and associated switches and waveguide assemblies. The system is intended to be free standing and entirely self-supported once mounted on concrete decking.

It is important to give consideration to the following:

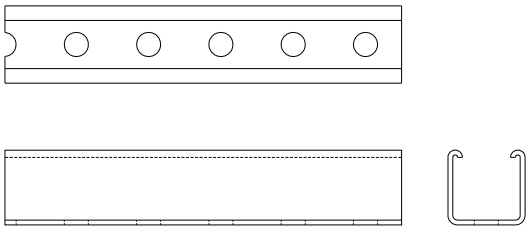
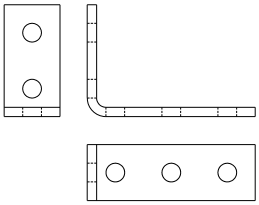
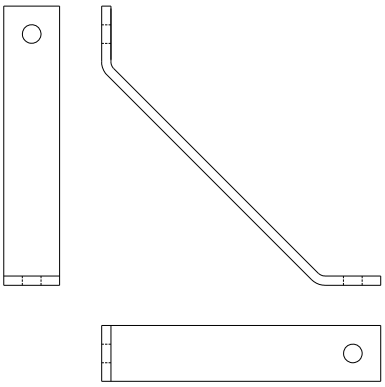
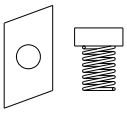
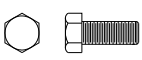
1. Structural integrity of the mounting deck.
2. Accessibility to all local user interfaces. (Ensure SSPA enclosure doors are free to open to the latched position.)
3. Adequate cooling air, 8.00” minimum clearance must be maintained between air intake and any surface that will inhibit air flow.
4. The High Power Outdoor SSPA should never be enclosed in such a manner that airflow is restricted. Normal operating range is -40 to +60°C.
5. Proper weatherized sealing of all connectors.

Note: The High Power Outdoor SSPAs should not be positioned in such a way that allows falling precipitation to enter the fans at the bottom of the amplifier. Doing so could void your warranty.

Installation

Reference Table 1-1 and Figures 1-1 and 1-2 throughout the assembly of the mounting frame.

Table 1-1: 1:2 System Mounting Kit Assembly Parts List (L205066-1)

ITEM	QTY	PART NO.	DESCRIPTION	OUTLINE (NTS)
1	4	L21190-2	UNI-STRUT, 27”	
2	4	L21190-14	UNI-STRUT, 36”	
3	4	L21190-13	UNI-STRUT, 82.5”	
4	4	B917	ANGLE, CONNECTOR, 5-HOLE	
5	4	B940-1	CORNER BRACE, 7.5”	
6	56	B911-1/2	NUT, SELF HOLD, 1/2	
7	56	MS15795-819	WASHER, FLAT STD, 1/2”	
8	40	MS35307-411	BOLT, HEX, 1/2-13X1.25, SS	
9	14	H119D	WASHER, SQUARE CHANNEL, 9/16” HOLE	
10	16	MS35307-418	BOLT, HEX, 1/2-13X2.75, SS	

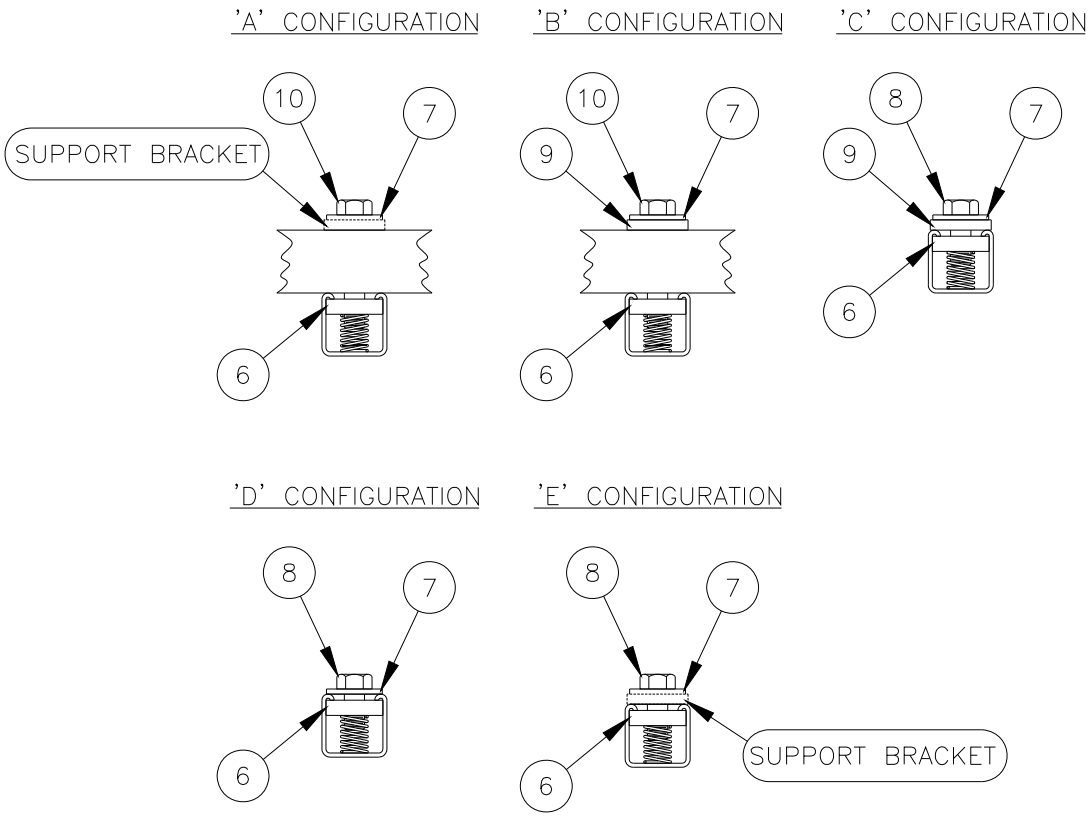


Figure 1: Hardware configurations

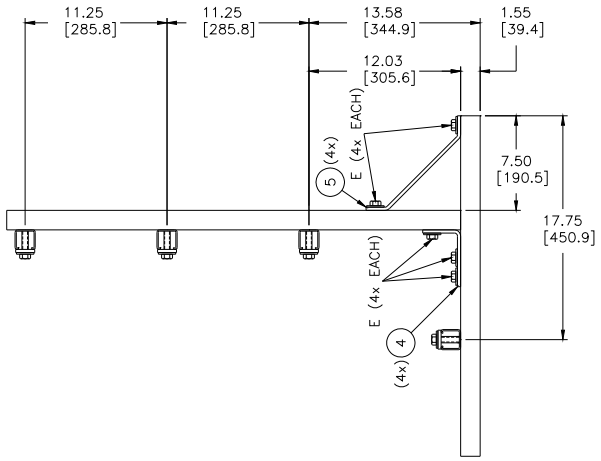
Warning: The base struts (Item 1) included in the mounting kit must be located and bolted securely to the decking prior to mounting the HPAs to the mounting frame. This is to ensure that tipping does not occur during or after system installation.

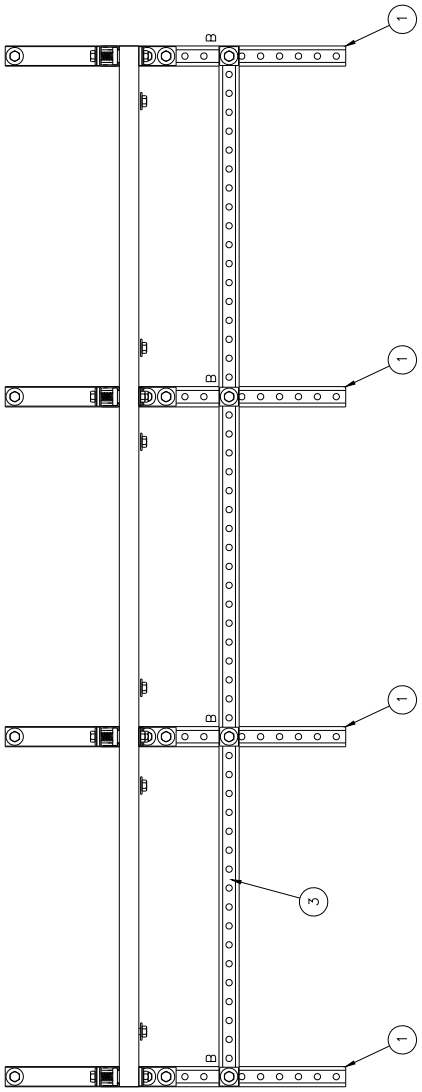
1. Locate 4 vertical struts (Item 2), and 3 cross struts (Item 3). Lay the 4 vertical struts (Item 2) flat, one beside the next at 27" spacings, channel side up. Referencing Figure 2, locate and place the 3 cross struts (Item 3) channel side up as shown. Note: when locating the cross struts on the vertical struts, allow for the 1 1/2" height of the base strut.

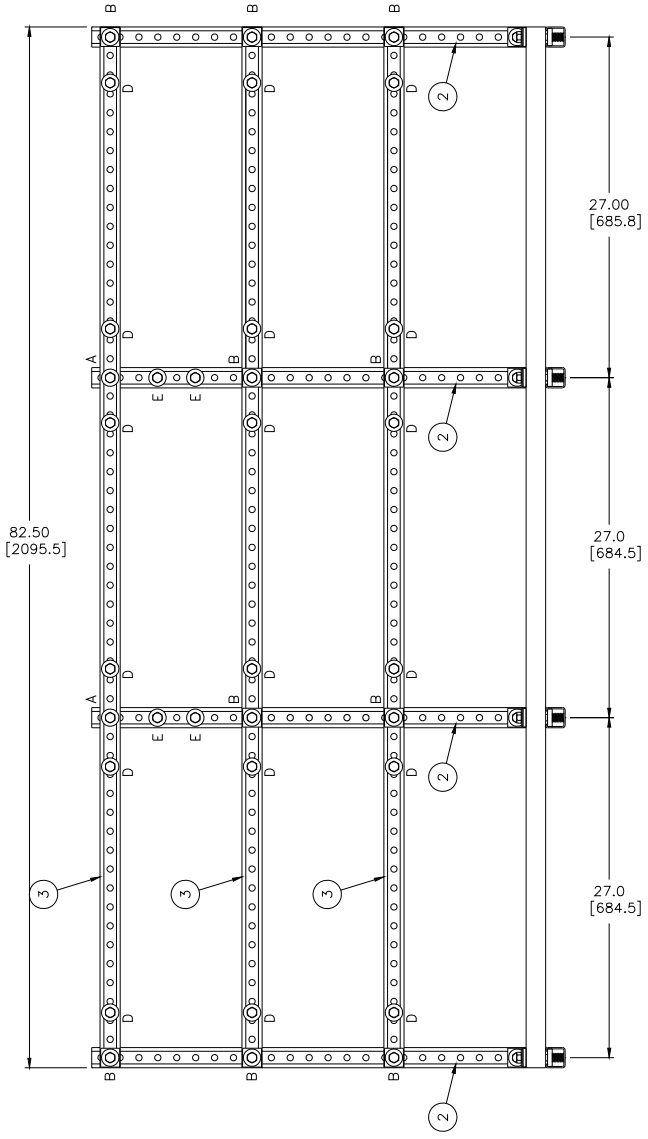
   Reference the 'B' Configuration of Figure 1 for the required hardware for this step. At the intersections of the vertical and cross struts, install 3 spring-loaded, self-holding nuts (Item 6) into the channel of each vertical strut. Secure the cross struts to the vertical struts using a 1/2-13x2.75" hex head bolt (Item 10), flat washer (Item 7), and square channel washer (Item 9) at each position.

   Note: Refer to the 'A' Configuration of Figure 1 for the hardware used on the top-most junctures of the two vertical struts in the middle of the frame. The switch assemblies will be mounted later and will be secured using this hardware. At this time, do not tighten the hardware at these junctions.

Figure 2:
1:2 High Power Outdoor SSPA System Mounting Frame







Check against the dimensions in Figure 2 to ensure the spacing is correct and tighten all hardware at the junctures labeled ‘B’ in Figure 2.

2. Locate 4 5-hole angle brackets (Item 4). At the bottom of each vertical strut install a pair of spring loaded self holding nuts (Item 6). Reference Figure 2 and the ‘E’ Configuration of Figure 1 for the required hardware. Using 1/2-13x1.25” hex head bolts (Item 8) and flat washers (Item 7), attach the short side of the 5-hole angle bracket to the vertical strut such that the long side of the angle bracket is in line with the bottom edge of the vertical strut. Repeat for the other 3 vertical struts. Tighten all bolts.

3. The framework consisting of the vertical strut sections (Item 2) and the cross strut sections (Item 3) should be checked dimensionally against Figure 2, and for square-ness. Verify that all hardware is secured as stated in the above steps before proceeding to Step 4.

4. Locate the 4 base struts (Item 1) and arrange them channel side up, spaced as shown in Figure 2. Slide a pair of spring loaded, self-holding nuts (Item 6) into the channels of each base strut. These will be used to secure the bolts through the long side of each 5-hole angle bracket from Step 2. Raise the frame to the upright position and set the vertical struts (Item 2) directly on each base strut so that the back of each vertical strut is 7.5” from the back edge of the base struts. Align the self-holding nuts in the base strut channels with the holes in the long side of the 5-hole angle brackets. Secure as shown in Figure 2, ‘E’ Configuration.

5. With the vertical strut framework mounted to the base struts, install one spring loaded self holding nut (Item 6) in each vertical strut and one toward the rear of each base strut. Position a corner brace (Item 5) as shown in Figure 2 and align the corresponding self holding nuts to the hole locations of the corner brace. Reference Figure 1, ‘E’ Configuration for the required hardware. Attach each corner brace with a 1/2-13x1.25” hex head bolt (Item 8) and flat washer (Item 7). Tighten all bolts.

6. Slide a self holding nut (Item 6) in each of the base strut (Item 1) channels approximately 6 3/4” from the front of each base strut. Referencing Figure 1, ‘B’ Configuration, mount the remaining cross strut (Item 3) to the base struts (Item 1) using 3 1/2-13x2.75” hex head bolts (Item 10), and square channel washer (Item 9). Tighten all bolts.

7. Reference Figure 1, ‘E’ Configuration of hardware. Secure two self holding nuts between the top and middle horizontal struts using a 1/2-13x1.25” hex head bolt (Item 8) and flat washer (Item 7) with each. This will be used to secure the Isolator or RF IN switch assembly in Step 14.

8. Reference the ‘D’ Configuration of hardware in Figure 1. Install spring loaded self holding nuts (Item 6) with 1/2-13x1.25” hex head bolt (Item 8) and flat washer (Item 7) at each of the positions labeled ‘D’ shown in Figure 2. Do not tighten at this time. These will be used to mount the HPAs to the frame.

9. With the mounting frame assembly fully erected, verify all framework is square and cross strut (Item 3) locations correspond to the dimensions provided in Figure 1.

Ensure all hardware is tightened as detailed in the above steps before proceeding to Step 10.

Warning: Because the individual HPA units are designed for operation in environmental extremes, all mechanical packaging is robust and substantial in size and weight. Each unit weights approximately 145 lbs (66 kg). Caution is advised during the mounting of each HPA to the framework assembly.

Mechanical support/lift is suggested for mounting of the HPAs. If mounting is to be done without the benefit of mechanical assistance, no fewer than 3 individuals should attempt installation. Two individuals capable of supporting the HPA must participate in positioning the HPA on the framework assembly while a third individual must be capable of installing the associated mounting hardware. Review all steps before proceeding.

At this time, anchor the mounting frame either to the prepared concrete decking, or to any suitable alternative installation. Make sure the frame is secure before attempting to attach the HPAs to the frame. Failure to do so may result in injury or damage to the equipment.

Note: The High Power Outdoor SSPAs should not be mounted in such a way that allows falling precipitation to enter the fans at the bottom of the amplifier. Doing so could void your warranty.

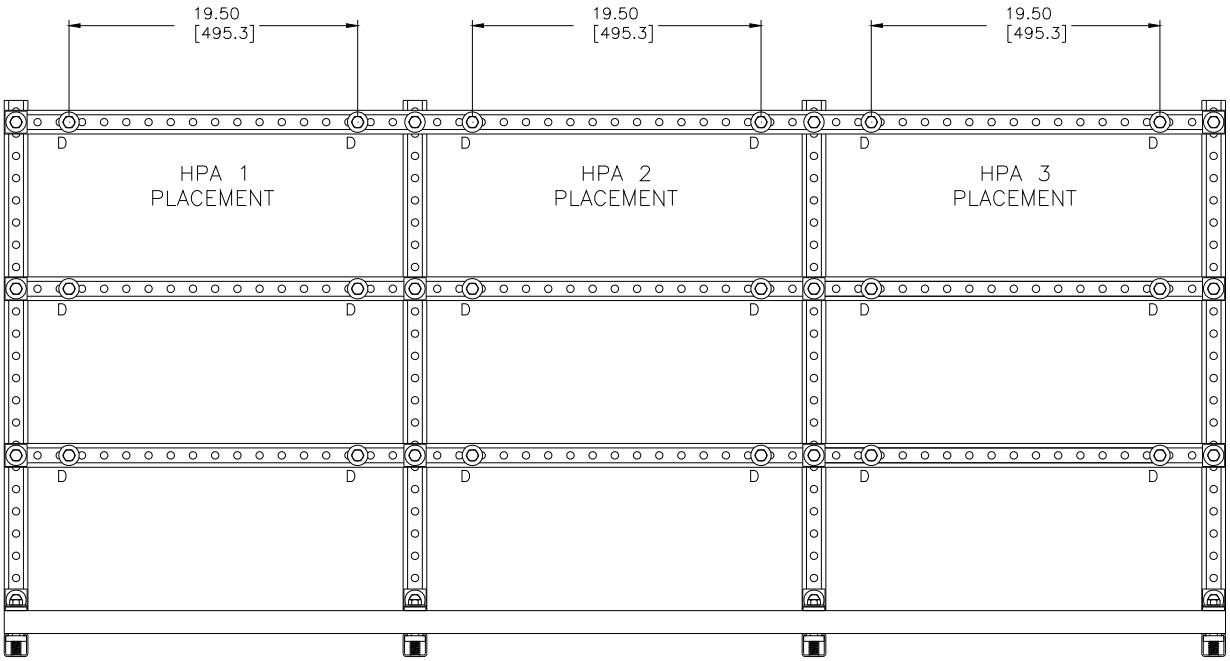


Figure 3: Outline, Hardware Positions for HPA Mounting

10. Reference Figure 3 and Figure 1, Configuration ‘D’. Adjust the 6 self-holding nuts (Item 6) you installed in Step 8 within the channels of the 3 cross strut sections (Item 3) of the framework. Ensure that they are positioned dimensionally to correspond with the 6 mounting bolts required to mount HPA 1 to the framework. Position the mounting holes of HPA 1 to align with the self holding nuts (Item 6) and attach with 6 sets of 1/2-13x1.25” hex head bolt (Item 8) and flat washer (Item 7) installed in Step 8. Tighten bolts to snug, but allow some freedom to slide the HPA if necessary, to allow adjustment for the attachment of the waveguide assemblies.

    Repeat Step 10 for HPA 2 and HPA 3.

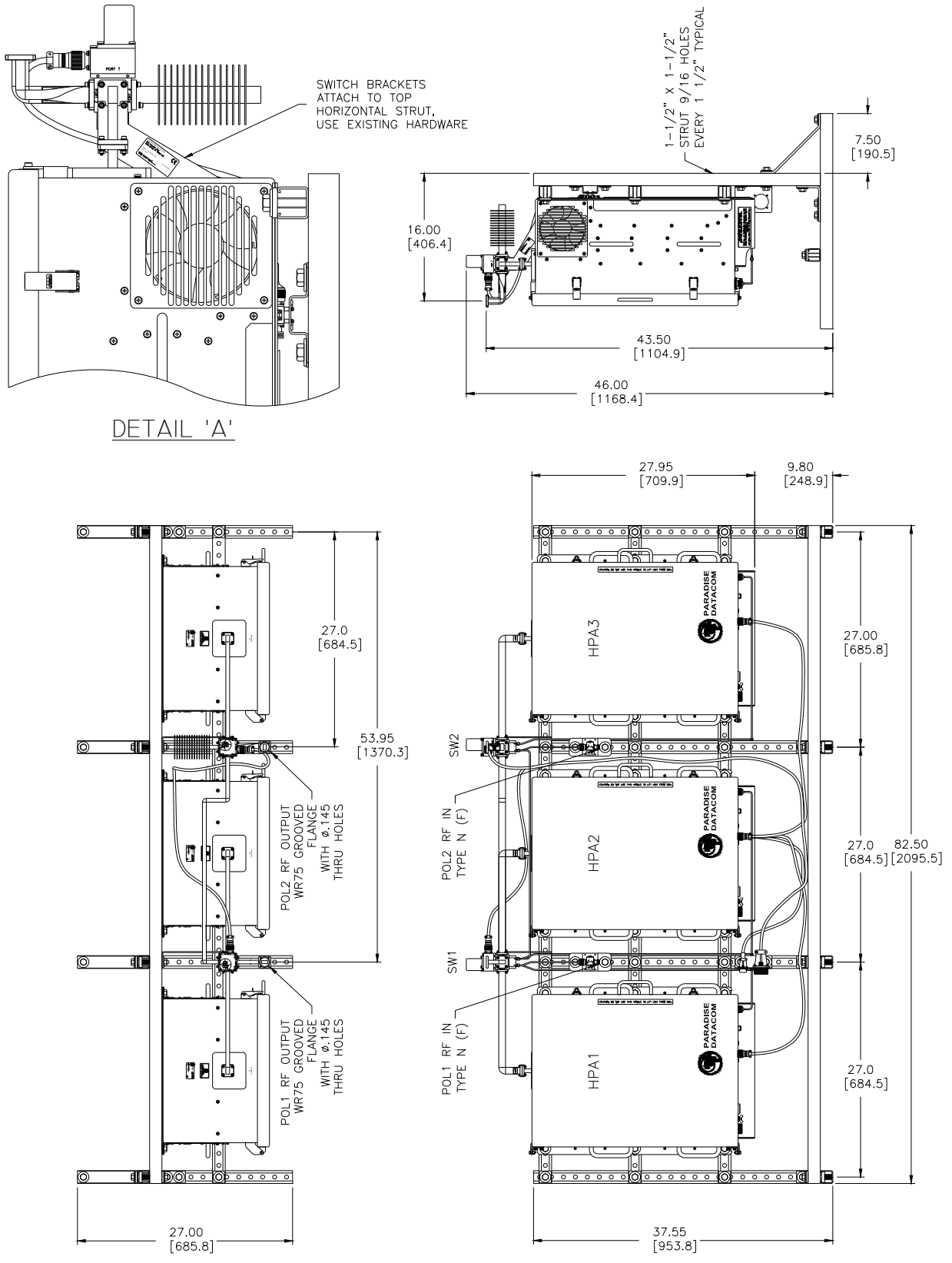


Figure 4: 1:2 Ku-Band High Power Outdoor SSPA System Outline

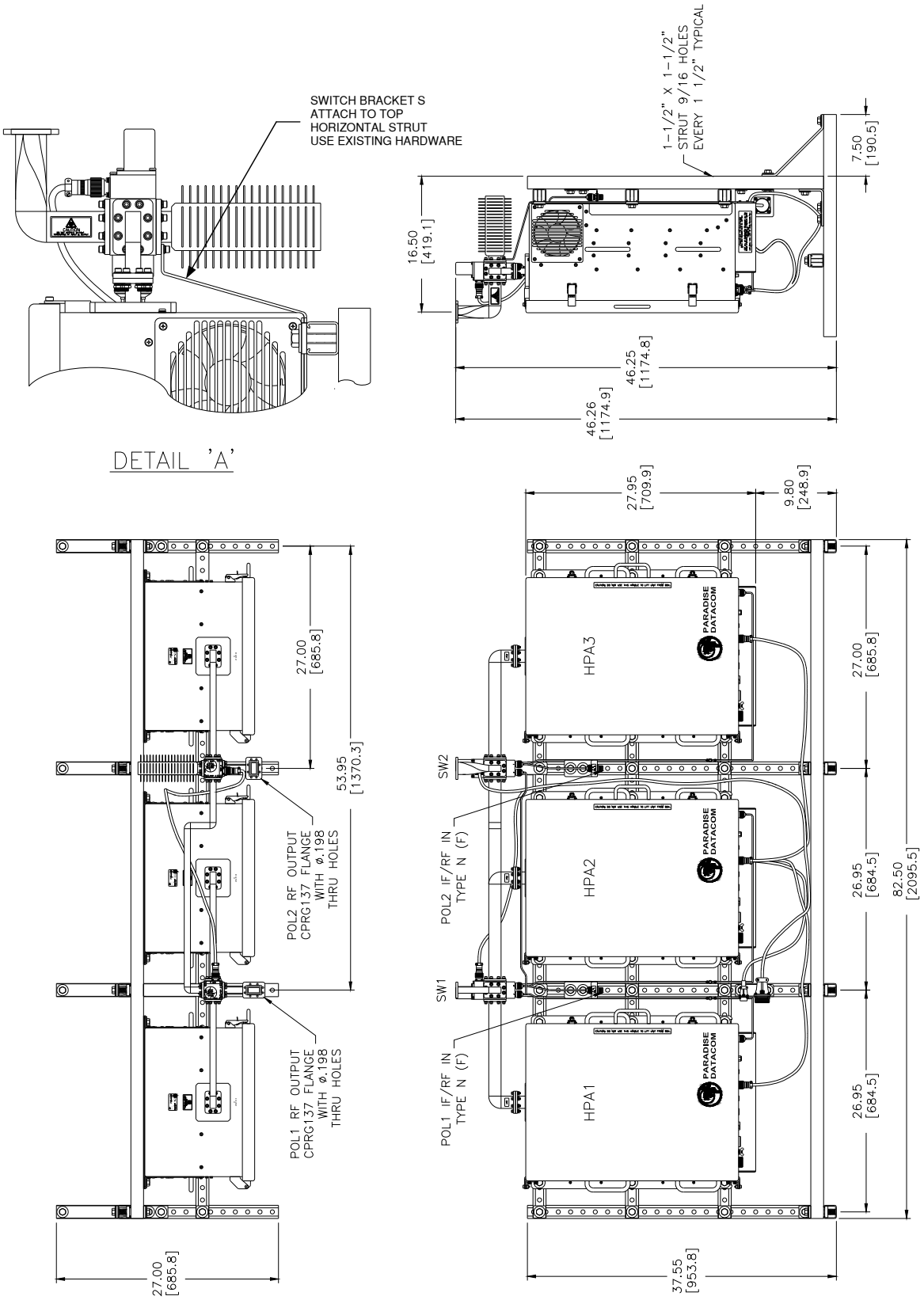


Figure 5: 1:2 C-Band High Power Outdoor SSPA System Outline

11. The switch assembly mounting brackets should be attached in-line with the vertical struts of the mounting frame as indicated in Figure 4. Each uses the same hardware that secures the strut pieces at that junction.

    a) For Ku-Band systems, see Figure 4, Detail ‘A’. Attach the support bracket to the frame where the horizontal and vertical struts intersect. Secure to the frame using the existing hardware.

    b) For C-Band systems, see Figure 5, Detail ‘A’. The switch assembly support should extend to just under the fins of the termination, where it should be attached to the switch assembly. Secure to the frame using the existing hardware.

12. Attach the waveguide pieces to the switch assembly and adjust the HPAs so that the waveguide aligns properly.

    a) For Ku-Band systems, attach all hardware as shown in Figure 6, and tighten securely. If the waveguide output from the switch is grooved, use the O-Ring gasket provided; otherwise, use the flat gasket provided. Table 1-2 shows the parts list for the waveguide mounting hardware.

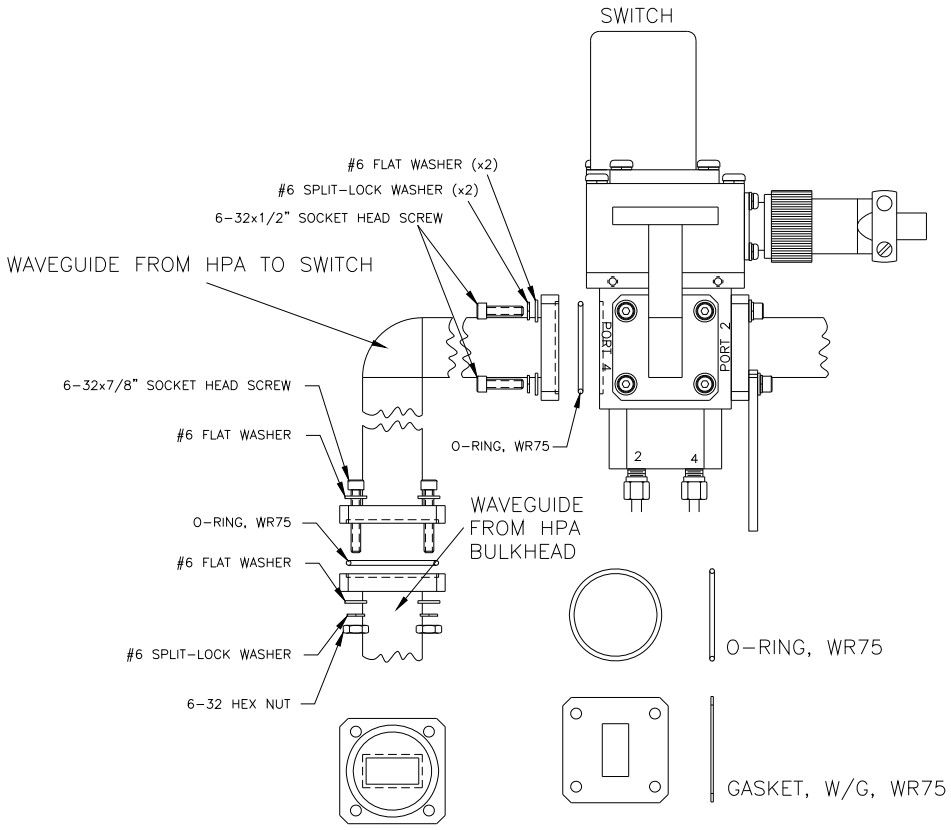


Figure 6: Outline, Waveguide Mounting Hardware Kit, Ku-Band

Table 1-2: Waveguide mounting hardware kit, Ku-Band 1:2

Qty.	Description
44	#6 Flat washers
32	#6 Split-lock washers
12	6-32 hex nuts, small pattern
12	6-32x7/8” socket head screws
4	6-32x5/8” socket head screws
16	6-32x1/2” socket head screws
2	Waveguide Gasket, flat, WR75
10	O-Ring Gasket, WR75

b) For C-Band systems, attach all hardware as shown in Figure 7, and tighten securely. If the waveguide output from the switch is grooved, use the O-Ring gasket provided; otherwise, use the flat gasket provided. Table 1-3 shows the parts list for the waveguide mounting hardware.

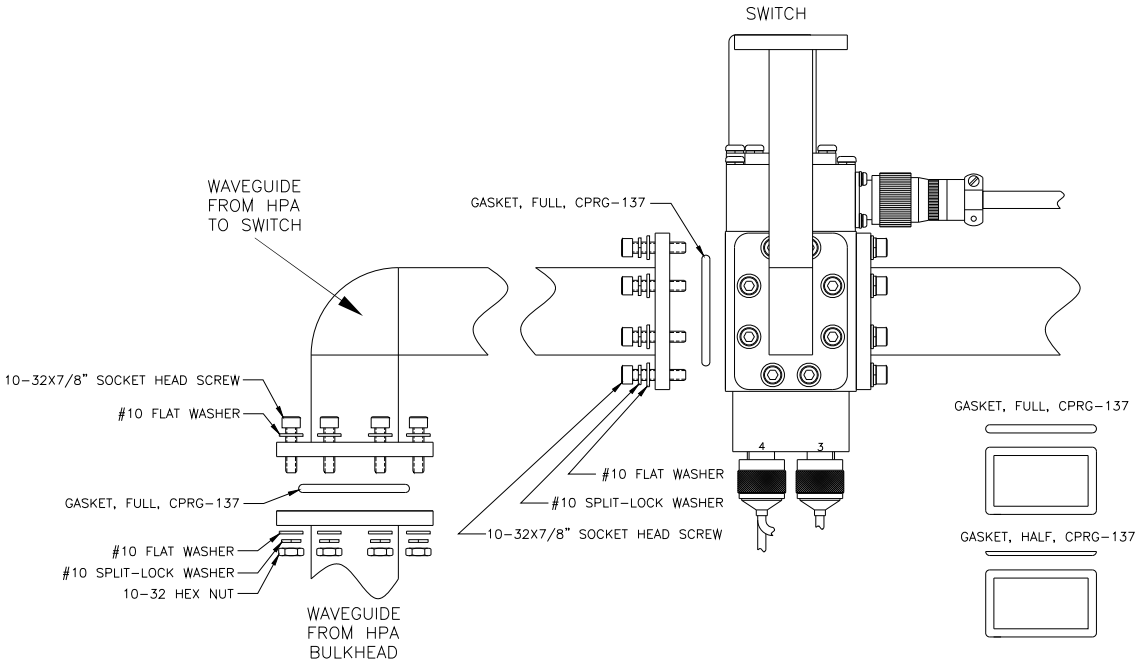


Figure 7: Outline, Waveguide Mounting Hardware Kit, C-Band

Table 1-2: Waveguide mounting hardware kit, C-Band 1:2

Qty.	Description
88	#10 Flat washers
64	#10 Split-lock washers
24	10-32 hex nuts, small pattern
24	10-32x7/8” socket head screws
2	10-32x5/8” socket head screws
38	10-32x1/2” socket head screws
2	Waveguide Gasket, full, CPRG-137
10	Waveguide Gasket, half, CPRG-137

13. Connect all cables and semi-rigid coax, beginning at the waveguide switch. Make sure all connectors are oriented correctly, and that the pins align. Do not attempt to force the connector into its receptacle.

14. Connect the isolator or RF IN Switch to the coax from the waveguide switch, then slide the hardware (from Step 7) to secure the bracket in place. See Figure 8. Tighten the hardware securely, then finish connecting all cables as described in your schematic. All cables are labeled for easy identification.

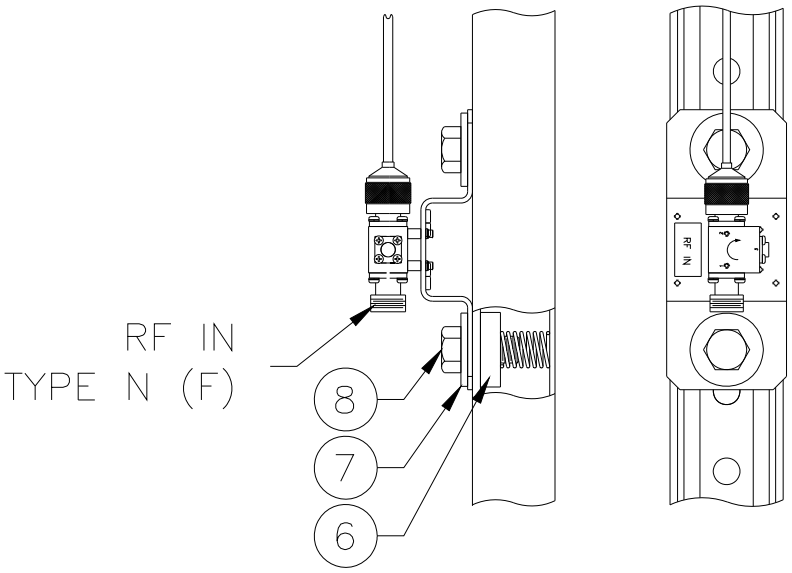


Figure 8: Mount Isolator Bracket to Frame

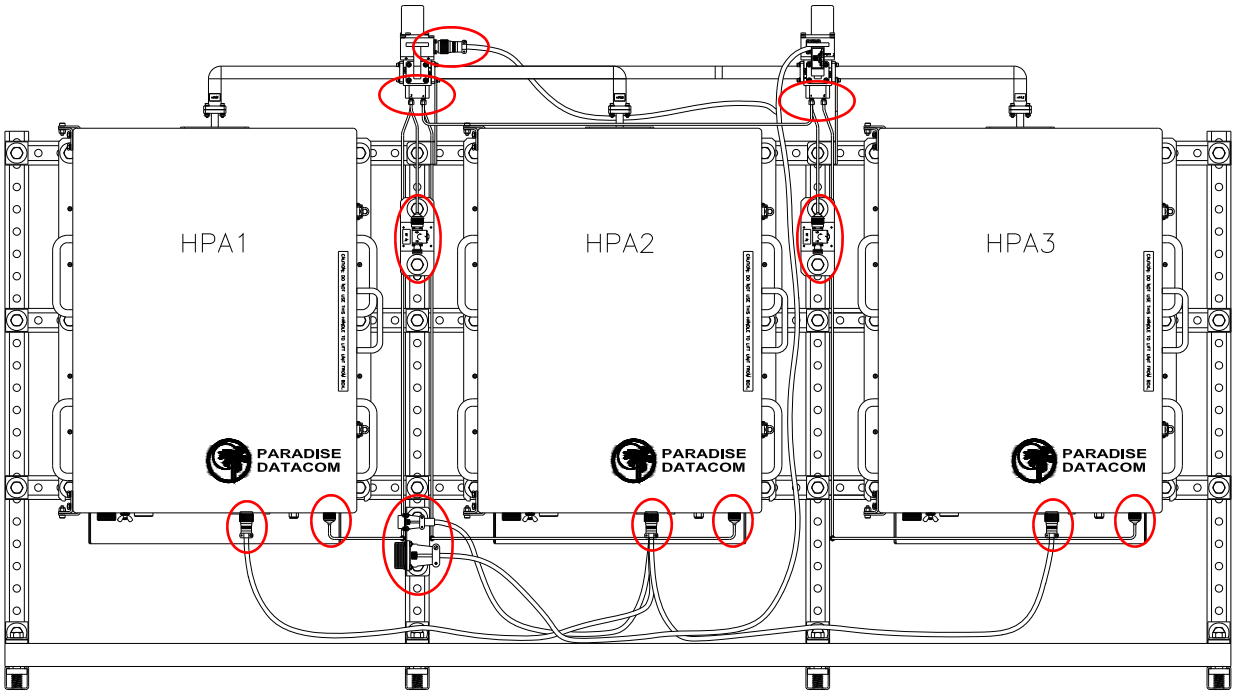


Figure 9: Wrap all cable connections with weather-resistant tape or putty

15. As a precaution, all connections should be wrapped with weather-resistant electrical tape, provided. Make sure each connector is clean and dry before applying the electrical tape.

    a) Apply electrical tape to all MS connectors, N-type connectors and any joins in the semi-rigid coaxial cables. See Figures 9 and 9a for a representative outline which points out the connectors that should be weatherized.

    b) Starting at the cable end, wrap the weather-resistant electrical tape around the connector and overlap by half the width of the tape. Continue wrapping until the connection mating point is enveloped. Wrap an extra turn around the base of the connector.

    c) Press and smooth the tape with your fingers to form a good seal. The tape surface should be uniform in appearance with no visible gaps or protrusions. See Figure 10.

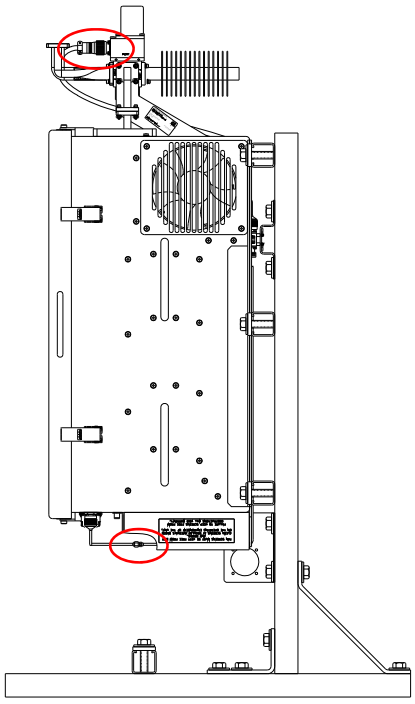


Figure 9a: Wrap all joins as well as connectors

Figure 10: MS connector, with weather-resistant self-amalgamating tape